

Template for ISB Documentation of Stressors

A. General Information:

- 1. Name or Location of Example/Approach:** Envirograms
- 2. Literature/Citations Used:** Andrewartha, H.G., and L.C. Birch. 1984. *The Ecological Web. More on the Distribution and Abundance of Animals*. Chicago: University of Chicago Press.
- 3. Reviewer(s):** John Wiens

B. Specific Questions:

- 1. What stressors are considered?**
- 2. Are stressors categorized? If so, how?**
- 3. Are the relations between stressors and management objectives modeled, and if so, how?**
- 4. If stressors are prioritized, describe the general approach.**
- 5. How might this approach be relevant to Bay Delta?**
- 6. Follow up regarding additional questions/literature review/etc?**

Andrewartha and Birch developed the “envirogram” concept as a way of logically portraying the array of factors that act on an ecological target (generally a species of interest). The factors are grouped into categories (resources, mates, predators, malentities) that affect the target either directly or indirectly, perhaps through multiple steps. Some of these factors are what others call “stressors.” The advantage of the envirogram approach is that it forces one to consider explicitly how cause-effect pathways are arrayed, and what is influenced by what. Like the CAP approach, it fosters clear thinking and a rationale identification of key stressors and how they may act on a target of interest. A bit esoteric, perhaps, but worth considering if it will help bring clear and careful thinking to the identification and prioritization of key stressors.